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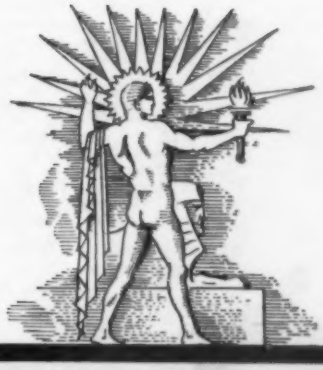
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



APRIL 14, 1934

Spring-Fever in the Gum-Tree

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The Weekly Summary of Current Science

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DO YOU KNOW?

Oil from swordfish livers is found to contain remarkably high vitamin potency.

Russian scientists are working on a map of the Soviet Arctic to be completed in 1937.

An eminent neurologist says that the brain is not one organ but a hundred organs combined.

Forty-one of Australia's 65 public museums are entirely financed by the Commonwealth or State.

The proposed air line from Shanghai to the capital of Tibet, Lhassa, would reduce a three-month trip to four days.

Mount Nebo, traditional site of the burial of Moses, was a place of Christian pilgrimage as far back as 386 A.D.

The serious heart malady, angina pectoris, strikes men more often than women, due apparently to their more strenuous activities.

Citronella oil, bane of mosquitoes, comes from a grass cultivated in Ceylon and Java.

More than 100 million pounds of fresh fruits and vegetables are now frozen each year by the frozen pack industry.

The industrialization program of Persia has advanced a step with the opening of the first cement factory in that country.

Ethylene gas is found an effective means of removing the husks from walnuts when the outer husks fail to crack normally.

A pencil with a light just back of the point is a new French invention for news reporters and others who need to take notes in dark auditoriums.

The discovery that hay fever was caused by grass pollens was made by Charles Blackley, an Englishman, about the middle of the nineteenth century.

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These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information for the article, but the references for further reading. Books cited can be supplied at Book Department, Science News Letter, at publishers' prices, prepaid in the United States.

PSYCHOLOGY

Scientists Seek Out Causes Of Person's Mental "Set"

In Very Early Childhood All Forms of Social Contact Begin Never-Ending Work of Building up Attitudes and Prejudices

THE ATTITUDES and prejudices that are so powerful in shaping man's actions for or against individuals, groups, or causes, are not inborn, yet they do depend on the accident of birth. In very early childhood, the influence of the social group begins its never-ending work of molding the mental "set" of the individual.

The careless comments of elders, the deliberate instruction of teachers, the voice of the radio, the talkies, and the press, all join with many other forces to contribute toward making the child into an adult who is militaristic or pacifistic, tolerant or tyrannical, liberal or conservative. Psychologists have recently been devoting considerable research to efforts to measure the attitudes of many different types of individuals and also to evaluate the effect on attitudes of various educational or influential devices.

Something of the way attitudes develop is told in a report to the *Journal of Social Psychology* by Dr. D. D. Droba of the University of North Dakota.

"If an individual is born into a society that is imbued with the war system, he will quickly become favorably disposed toward war," he writes. "If an individual is born into a society without a war system, such as the Eskimos, he will either develop no attitude toward war or he will develop one of an unfavorable sort.

"An interesting experiment had been performed by a Polish psychologist, F. Baumgarten. The date of the experiment was 1918, the place was Warsaw. It was performed during the German occupation of the Polish territory. The results were buried under the ground for fear that the Germans might seize them and punish the experimenter.

"She submitted a questionnaire to 360 Polish boys and 340 Polish girls to find out why children hate. Among the questions asked was one with respect to happenings that affected them most.

"The children cited a number of striking incidents such as explosions, the cries or sobs of wounded or dying, the burning-up of the bridges and the plundering of the German soldiers.

"Another question was as to what they wished for the enemy. A series of punishing statements were given such as death, falling off a four-story building, and that all should go to hell alive. . ."

Thus do little children learn attitudes of hate.

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CHEMISTRY

Earth's Rarest Elements Held Once Abundant

WHY SOME elements are more abundant than others is a question that has long interested scientists because of its importance in any theory of the evolution of the elements. Certain relations to atomic numbers have been found, and many hypotheses have been proposed.

However, it does not seem to be always the most stable atoms that survive the atomic struggle for existence. For instance, Drs. W. M. Elsasser and R. Guggenheimer point out, as reported in the *Comptes Rendus* of the French Academy of Sciences, that the noble gases neon, argon, krypton, xenon, which disdain to form any chemical combinations whatever with other elements and are among the most stable of the atoms, are exceedingly rare on this earth—whereas the elements which stand on either side of them in the periodic table, the metals sodium, potassium, rubidium, caesium on one side, and the acid-forming halogens fluorine, chlorine, bromine, iodine on the other side, which are chemically the most active elements known, are millions to billions of times more abundant.

By the loss of an electron from the nucleus, each of these noble gases is stepped up one atomic number and transmuted into the metal which stands next to it in the table—neon to sodium, argon to potassium, etc. By the loss of a positron, or of an alpha particle and an electron, from the nucleus, each is degraded one atomic number into the halogen just preceding it in the table—neon to fluorine, argon to bromine, etc.

Drs. Elsasser and Guggenheimer suggest that originally these noble gases were abundant in the earth's atmosphere, but that by millions of years of bombardment by neutrons they have been converted into these other elements, with have been incorporated in the earth's crust where we now find them in abundance, while the atmosphere has been almost completely denuded of the noble gases.

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PHYSIOLOGY

Spring Fever Really a Disease; Treatment, Cod Liver Oil

SPRING fever is not a joke after all, it now appears from latest medical research. It is actually a disease and physicians of the future will have to consider it as such and treat it "conscientiously with irradiated cod liver oil and sunshine, not with the sulfur and molasses of our fathers." This is the opinion of Dr. Joseph T. Smith, physician and assistant editor of the Bulletin of the Academy of Medicine of Cleveland.

Spring fever, the disease, is a condition in which the body's stores of calcium are depleted.

"Capacity for work is lowered, physical fatigue easily occurs, and the patient's liability to disease is increased."

Dr. Smith quotes those words from a scientific description of calcium deficiency. But you might have written them yourself as a description of your own state on these first warm days of spring.

A real drop in the amount of calcium in the blood of normal persons during the winter months has been observed by Dr. J. W. Mull of Western Reserve Medical School, Dr. Smith reports, adding the following: (*Turn Page*)

"As the sun rises higher in the sky with advancing spring, in some way the strengthening ultraviolet rays correct this calcium deficiency. Possibly this result is due to the irradiation of the ergosterol, which is a normal constituent of the skin; or possibly the ultraviolet rays ionize the calcium in the tissues so it is more diffusible.

"Whatever the method of their action, it seems true that 'ultraviolet rays are the natural stimulus of that great metabolic organ formed by the living cells of the epidermis.'"

Scientific evidence thus seems to add its weight to the natural inclination to get out into the spring sunshine.

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MEDICINE

Sunburn no Assurance Of Rickets Prevention

JUST because Johnny has a good coat of sunburn does not mean that he is being protected against rickets, it appears from studies reported by Drs. Arthur Knudson and Frank Benford, Albany Medical College, to the American Society of Biological Chemists. Rickets is a disease of the bones characterized by bowlegs and bulging forehead.

The rays of sunshine that produce sun tan, or erythema as scientists call it, are not as effective as other wavelengths in curing or preventing rickets, the Albany investigators found. The rays that are most effective in preventing or curing rickets are shorter, or farther away from the visible light, than the rays that produce the deepest sunburn. It so happens that at the wavelength where the rickets-preventing rays are at their peak, the sunburning rays have least effect.

Ultraviolet lamps and other radiation devices used by physicians and in the home for health protection are generally rated by the amount of sunburn they produce. Dr. Knudson's discovery shows that in some cases lamps that produce satisfactory and even painful sunburn are not the most effective means of protecting against rickets. In the summer sunshine of Albany, where Drs. Knudson and Benford did their work, it happens that the sunburning qualities of natural sunlight coincide with sufficient rickets-preventing qualities to make the sunshine give health protection as well as coats of tan. In the winter sunshine of the same region the anti-rachitic rays are practically absent although it is possible to get sunburn through long exposure to the winter sunshine.

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METEOROLOGY

Analysis of Stratosphere Air Verifies Pre-Flight Estimates

THE FLYERS who have recently ascended into the stratosphere were not traveling in totally unknown territory. True, no one had preceded them to such heights, but scientists working at their desks, without moving off terra firma, had formed an estimate of conditions to be found there.

Using as a basis for their calculations such data as those obtained from observations of the way sound travels along the surface of the earth, and the way radio signals are returned from the electrified reflecting layer of the atmosphere, physicists were able to calculate the composition of the atmosphere at great heights. Their calculations have now received verification from analysis of the samples of air brought down from a height of nearly 12 miles by the Soviet balloon "USSR."

Drs. H. B. Maris and E. O. Hulbert, working at the Naval Research Laboratory, and Dr. B. Gutenberg at the California Institute of Technology, discovered from their calculations that the air high above the earth, as well as that near the surface, is warmed by the sun during the day and cooled by its own radiation at night. This daily variation in temperature must give rise to winds, they reason. And winds inevitably mean a mixing of the air that would cause the composition to be uniform.

The proportions of the gases in the air remain the same, they conclude, up to the great height of about 100 kilometers or 62 miles, except for ozone, which exists in greater proportion above 30 miles than it does at sea level.

Dr. Gutenberg has based his results, besides, on the spectrum of the auroras and on the height at which meteors appear. Furthermore, the fact that helium enters the atmosphere from the ground in such quantities that it should form a noticeable part of the stratosphere but that only traces have been observed, seems to indicate that this gas escapes from the atmosphere into the interstellar space, and the same seems to be true with hydrogen. The conclusions of Dr. Gutenberg are that we have very probably an increasing temperature in the stratosphere, beginning at a height between 30 and 40 kilometers (about 20 miles), no noticeable change of composition at least until a height of about 100 miles, no hydrogen at any height, a slowly decreasing amount of oxygen at heights of some hundred miles and, probably, small amounts of helium or water vapor or neon at very great heights. The principal gas at any height is nitrogen.

Since the samples obtained by the "USSR" showed the same proportions of oxygen, nitrogen, and other gases as are contained in the air we breathe at sea level, the physicists look upon this finding as evidence of the correctness of their theoretical predictions.

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PHYSIOLOGY

Effects of Alcohol on Mind and Body Summarized

WITH the legal status of alcoholic beverages settled, discussion now returns to the question of how alcohol affects the human body and mind.

Dr. Haven Emerson, professor of public health practice in Columbia University, has listed in his new book *Alcohol, Its Effects On Man* (D. Appleton-Century) the following fifteen points on which he says medical scientists who have studied the subject agree:

1. Alcohol is a narcotic which, by depressing the higher centers, removes inhibitions.

2. Outside of the nervous system and the digestive tract, alcohol used as a beverage has little demonstrable effect.

3. It is a food, utilizable as a source of energy and a sparer of protein, but it is such only to a very limited extent.

4. It is improbable that the quality of human stock has been at all injured or

adversely modified by the long use of alcohol, although the effects on the individual are often devastating.

5. The therapeutic usefulness and value of alcohol are slight.

6. It may be a comfort and a psychological aid to the aged.

7. It does not increase, and it sometimes decreases, the body's resistance to infection.

8. By releasing inhibitions, it makes for social ease and pleasure, and herein lies one of its great dangers.

9. Its effects are best studied by changes of conduct.

10. It impairs reason, will, self-control, judgment, physical skill, and endurance.

11. It may produce situations from which crime and social lapses result.

12. It is a frequent destroyer of health, happiness, and mental stability.

13. Its use commonly lowers longevity and increases mortality.

14. It is used primarily for its psychological effect as a means of escape from unpleasant reality.

15. It constitutes an important community health problem.

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Government scientists who have been experimenting with the freezing of vegetables to preserve them report that, in all cases, the flavor and general appearance of experimental lots of frozen vegetables were superior to vegetables canned by the usual heat process, both before and after cooking.

VITAL STATISTICS

70-Year Life Expectancy Seen for Child of Future

Today's Boy Baby Anticipates 59 Years of Life, Girl 63, With Chances for Older Age After Perilous First Decade

HOW LONG will you live?

The uncertainty of life is just as great as it ever was, and no man knows when the shadow of death will pass over him. But statisticians are able to figure from the death rates and the success of physicians in their battle against diseases, what the average length of life will be for the United States. This is, in fact, a routine practice on which are based the premiums set on life insurance policies.

Drs. Louis I. Dublin and Alfred J. Lotka, statisticians for the Metropolitan Life Insurance Company, have compiled tables showing how long people living today may reasonably expect to continue in this world, and also their chances of dying of certain diseases. Going even further, they have predicted what will be the greatest average length of life that can be reached in the future with our present knowledge of medicine and sanitary science. These are made public in a report to *Human Biology*.

The child born today, if a boy, may expect to live 59 years. He has a five-year advantage over his brother born about ten years ago. The 1919 or 1920 boy infant had an expectation of life at birth of 54 years.

The child born today, if a girl, may expect to live for nearly 63 years, and she has a six-year advantage over her sister born in 1919 or 1920.

The child who has already survived the perilous first ten years of life, however, has a much better chance. If a boy, he may expect to reach the age of nearly 65. If a girl, she may pass the 67-year mark.

In case you have already struggled along to the age of 60, you may expect to live another 14 years if a man or nearly 16 years if a woman.

But the child born in the future may well expect to reach the Biblical three score years and ten.

What will you die of? No matter what your age is, the chances are greatest that you will die of heart disease. Organic heart disease is, today, the leading cause of death. In general, the old-age diseases—heart trouble, diabetes, accidental falls and cancer—show a great increase as causes of death when compared to the fatalities of the early part of this century. This is partly due to the comparative lack of progress in mastering the diseases of old age, partly to the fact that the population is aging—there is a greater proportion of the aged amongst us now—but partly to the more pleasing fact that children's diseases are being conquered to a remarkable extent. Many of the lives of little children that under previous conditions would have been carried off by the pathetic diseases of children such as diphtheria, infantile diarrhea, and tuberculosis, are preserved for another fate.

Death is something that may be postponed, but can never, no matter what the extent of our medical skill, be eliminated. He who does not die today will live to die another day, possibly of an automobile accident. That is now listed as tenth in the leading causes of death.

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THE COOLING WATERS BRING FORTH LIFE

The first forms of life on this planet, when its primal volcanic forces had subsided enough to permit water to exist as a liquid (though still hot) may have been lower algae such as now inhabit hot springs terraces. Charles R. Knight has painted his conjecture of such an early life scene as a mural in the Field Museum of Natural History.

EDUCATION

Early Training an Advantage But Maturity More Important

IT USED to be that children started to school at the age of six or even later. The introduction of the kindergarten pushed the entrance age forward another year. Now psychologists and educators are emphasizing the importance of the impressions received in very early childhood, and as a result of this influence babies are being placed in schools under the guidance of trained educators at the very tender age of two years.

Parents and psychologists are wondering just how great an advantage early training is to the child. Will the child who receives no special training until a later age learn faster when he gets it and catch up with the child who starts his training younger? Or will he learn more slowly for the delay?

Recent striking experiments with twin babies in New York showed that early training will allow an infant to qualify as an athlete while his untrained brother remains just a baby, incapable of any extraordinary feats of prowess.

But encouragement for the child lacking in opportunities for early training comes from another experiment with twins conducted by Dr. Josephine R. Hilgard, at the Clinic of Child Development, Yale University.

These Yale twins were four-and-a-half years old and so much alike that each one upon looking unexpected into a mirror mistook the image for her sister. Each one was given eight weeks of practice on skills dear to the hearts of childhood, such as cutting with scissors, tossing rings, walking on a narrow walking-board, and memory of toys, but what one learned the other did not "study." After three months each received eight weeks of practice on the skills practiced earlier by her sister.

In general, the later practice period resulted in the greater improvement. Nevertheless, after six months had elapsed, both had forgotten their skills to the same level.

It would seem, that while training gives a great advantage to a child, small differences in age at which that training is given become unimportant when compared with the changes effected by the passage of time.

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DENTIST'S THIRD HAND

A small mouthlamp that can be boiled and disinfected has been introduced in Germany. It is not necessary for the dentist to hold the lamp, and its mobility and flexibility enable it to follow a patient's moving head.

ANTHROPOLOGY

"Go East," Slogan of First Great American Migration

"GO EAST!" This was the slogan, whether expressed in exact words or not, of the real pioneers and discoverers of America.

David I. Bushnell, Jr., collaborator of the Bureau of American Ethnology, at Washington, D. C., has been mapping migrations of the first people who settled the land east of the Mississippi—the Indians. He reports the conclusion that America was first populated from the West eastward, just the reverse of the famous "Go West" drive of European colonists when they began to open up lands they had not yet explored.

Mr. Bushnell's study of great Indian tribal migrations east of the Mississippi is the first attempt to plot these prehistoric migrations as a whole. His maps, representing many years of work, practically open up a new chapter in American history.

The Algonquians, the first Indians the English settlers met were migrants from Northwest, Mr. Bushnell states. They had, he says, probably "skirted the shores of the Great Lakes before reaching the country farther south."

The Algonquians were on a great southward trek when their progress was stopped by a wave of Siouan peoples moving from the Southwest. These forced the Algonquians eastward and northward to about the locations where the English explorers found them.

Except for these Algonquians, Mr. Bushnell believes, all the eastern Indians were southerners, who came originally from the Southwest.

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SOCIOLOGY

Exclusion of Subnormal Immigrants Suggested

MENTAL tests for immigrants desiring to come to the United States, and admission only of those who are normal mentally, was urged before the New York Branch of the American Psychological Association by Dr. Clairette P. Armstrong, psychologist of the Court of Domestic Relations, New York City.

Problem children appearing in the Children's Court, in the Parental School for chronic truants, as wards of the Department of Public Welfare, in the ungraded classes of the public schools and as mental defectives in the Children's Hospital, Randall's Island, in New York City, are largely mentally subnormal children born of parents one or both of whom had low mentality, Dr. Armstrong's report revealed.

An entirely disproportionate percentage of these "deviate" children are of foreign parentage. Only about a third are of American-born parents.

The barring of such mentally inferior persons would be a humane action, Dr. Armstrong pointed out, because it is so very difficult for such persons, even those who are only dull normal or borderline in intelligence, to adjust to the complications of life in the United States.

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ASTROPHYSICS

Ionized Gases Suggested As Cause of Meteor Light

Trail Would Not Last If Heated Elements Caused Light, Declares Scientist in Debated Paper to French Academy

JUST WHY meteors shine with a bright white light is not known.

This surprising fact was brought out in a controversy over "shooting stars" between two French scientists.

Every schoolboy has been taught that when a meteor rushes into our atmosphere, the friction of the air raises its temperature until it begins to glow. Particles of the incandescent body are torn off and these form the fiery trail that is left behind.

Nothing could seem simpler or more obvious than this explanation. But, as frequently happens, the thing is not so simple when we examine it more closely.

One trouble is that the light of a meteor is white, even bluish. It is whiter than an incandescent tungsten filament. Now the temperatures at which bodies will glow with a red, orange, yellow, or white light are well known, and there are very few substances that can be heated to a white incandescence without melting or vaporizing—and they are not the stuff of which meteors are made.

Meteorites that have reached the ground have been found to be either stony or composed of nickel and iron. Rocks melt at a red heat. Anyone who has seen an active volcano will remember that the lava is red. Molten iron is orange, as anyone may see in an iron foundry. How does it come then that the light of a meteor is white?

Would Cool Too Quickly

Another difficulty is the light of the trail. According to the orthodox theory it is due simply to incandescent particles torn off from the main body of the meteor. But calculation shows that these minute particles, even if they were originally at the 12,000 degrees temperature necessary to give a white heat, would cool to dullness in less than a second. But a brilliant meteor often leaves a trail that lasts for many minutes, and can be seen wafted about by the wind.

Confronted by these difficulties, Prof. P. Burgatti, an Italian physicist, and Prof. Ch. Fabry, University of Paris, and others have suggested that the glow of a meteor is an electrical phenomenon. They pointed out that the Kennelly-Heaviside layer, which plays an important part in the transmission of radio waves, is full of ions or electrified particles, so that the rapidly traveling meteor is subjected to a terrific bombardment of ions. The very few spectra that have been obtained of flying meteors, they also pointed out, show the characteristics of a glowing gas, not at all of an incandescent solid.

The two French scientists who took part in the recent discussion before the French Academy of Sciences each pursued the rather dubious tactics of proving his point by disproving the opposite. Prof. Jean Mascart of the University of Lyon showed that meteors begin to glow long before they reach any dense portion of the Kennelly-Heaviside layer. The pressure due to air resistance on a swiftly moving meteor amounts to several hundred atmospheres. At this pressure combined with the high temperature, we do not know, he said, just what the spectrum of a gas would be like, because the conditions are not reproducible in the laboratory. He therefore concluded that the simple mechanical theory is substantially correct.

Prof. Ch. Fabry, who took the other side, pointed out the difficulties of the mechanical theory which we have already described. However, he did not quite come to the conclusion that the electrical theory as at present formulated is therefore correct, but to the safe conclusion that after all we do not really know just what causes the light of a meteor.

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CHEMISTRY

Disagreeable Alcohols Come From Smothered Vegetables

FOOD handlers who zealously keep air away from fresh vegetables, on the theory that the oxygen will destroy their vitamin C content, are running serious risk of ruining flavor, Drs. E. F. Kohman and N. H. Sanborn of the National Canners Association told the food chemists of the American Chemical Society.

Normal access of oxygen does not hurt this vitamin, Dr. Kohman declared, while shutting off the air permits the plants' own enzymes, as well as those of alien bacteria and molds, to carry on "anaerobic" respiration, producing alcohols and other compounds that give the foods flat and disagreeable flavors.

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MEDICINE

Monkey Drug Addicts Act Like Human Dope Victims

MONKEYS that became drug addicts in the cause of science appeared on the moving picture screen for the benefit of members of the Federation of American Societies for Experimental Biology. The monkeys had become addicted to morphine, codeine, heroine and dilaudid, Dr. M. H. Seevers of the University of Wisconsin reported.

They behaved just as human addicts do when the drug is withdrawn, with one exception. The monkeys never learned to crave the drug to which they were addicted. Neither did they learn to associate the drug with relief from the distress they seemed to suffer when human drug adidct.

The symptoms of withdrawal which they showed were a pinched expression of the face as if they were in pain or distress; lack of appetite; general overexcitability; persistent chattering, yawning, shivering and trembling; and goose pimples, like the "cold turkey" of the human drug addict.

The obvious conclusion from the study of these animals, Dr. Seevers said, is that all the drugs used are capable of producing changes in body cells of such a nature that these cells demand a constant supply of the drug in order to function with apparent normality.

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ICHTHYOLOGY

Two Pairs of False Eyes Mark New Fish Genus

EQUIPPED with two pairs of huge "false eyes" and bright orange-pink in its body color, a hitherto unknown kind of fish brought up from the ocean depths of Puerto Rico by the Johnson-Smithsonian deep sea expedition last winter has been given separate generic rating and the scientific name *Johnsonina eriomma,* in honor of Eldridge R. Johnson of Philadelphia, sponsor of the expedition. The eye-spots, which are only body decorations and of no use for seeing purposes, are each a full fifth of the fish's body-diameter in length. One pair is on the creature's head, the other pair on its sides near the tail.

Two other strange fish species new to science were brought back by the expedition. One, a bottom-dweller, is enclosed in shell-like armor that bristles with sharp quarter-inch spines. This species has been named *Peristedion bartschi,* in honor of Dr. Paul Bartsch of the U. S. National Museum, director of scientific work of the expedition. The other new species is a member of the "lantern-fish" group. These fishes are permanent dwellers in the dark, deep waters; they probably have no knowledge that there is anything but water in the world, for they are never found near shore or on the bottom.

Science News Letter, April 14, 1934

MEDICINE

Superior Antibodies Protect Adults From Diseases

WHY DOES Johnnie get scarlet fever when his papa does not?

This subject of the effect of age upon our bodily reactions has been newly approached by Dr. Leona Baumgartner of the Yale School of Medicine, who reported her studies to the American Association of Immunologists. Dr. Baumgartner investigated the relationship of the age of an individual to his ability to produce antibodies.

"It is by virtue of these so-called 'antibodies,' common examples of which are the well known antitoxins for diphtheria and lock-jaw, that our ability to resist bacterial diseases is supposedly enhanced," Dr. Baumgartner explained.

In her experiments, rabbits of widely different ages were inoculated exactly as human beings are given "typhoid shots." The adult rabbit produced more antibodies than the young rabbit and slightly more than the very aged rabbit. Moreover, various experiments with the antibodies produced by this method of immunization showed that those antibodies produced by the adult animal differed qualitatively from those produced by the young and the aged animals. The speed of the reaction of the adult was decidedly greater than that of the young and slightly greater than that of the aged.

This demonstration of a change in the quality of the antibody produced at different ages is a concept new to those who are interested primarily in studying the mechanisms by which the body protects itself. Its probable relation to the resistance which adulthood seems to bring to certain diseases is interesting.

Science News Letter, April 14, 1934

ORNITHOLOGY

Woodpecker Lives As Parasite on Insects

WHEN insects live parasitically on birds, that's hardly news—ask anybody who has ever kept pigeons or poultry. But when a bird lives parasitically on insects—

H. G. Deignan, Washington ornithologist who has studied the bird life of Siam, Indo-China and other little known lands of southeastern Asia, tells this one. There is a species of rufous woodpecker that lives all through that warm corner of the great eastern continent. One subspecies of the group, thus far known only from Siam, inhabits the thickets of giant bamboo most of the time. But during the nesting season it forsakes its usual feeding ground and takes to the thick jungle. Here, high in the trees, a certain genus of ants make great lumpy nests among the branches. The material of these nests, made apparently out of wood pulp chewed up by the jaws of the insects, is of about the consistency of papier maché.

The woodpecker drills into these as one of our own native woodpeckers might into a rotten tree, and makes its own nest within the ant nest. Not only that, but all during the time Mrs. Woodpecker sits on her eggs, she does not need to travel an inch to find her meals. She simply helps herself to the ants and their larvae and pupae that fill the swarming galleries about her. Mr. Deignan says that this is the only case known to him of a bird living parasitically on insects.

Anyway, it's a pretty soft life for the rufous Siamese woodpecker.

Science News Letter, April 14, 1934

IN SCIENC

ZOOLOGY

Ho-Hum! Live "Teddy" Has Yawny Spells, Too

See Front Cover

KOALA, his proper name is; "native bear," Australians have nicknamed him, though he is closer kin to our American opossum than to any bear. But he is the living prototype of the "Teddy bear" that has become a world-wide toy, persisting since the days of the First Roosevelt. Pioneers of the Australian bush hunted him for his soft, saleable skin, just as mercilessly and as recklessly as our own pioneers wiped out some of our own native animals; until now his principal refuge is the semi-domestication of Koala Park near Sydney, established and maintained by Noel Burnet.

Koala is a most popular little fellow: good-natured and gentle as most of the smaller marsupials are, with appealing "human" tricks and mannerisms. He would be in great demand for a pet, without question, except that his feeding habits will probably always keep him confined to his native land. For Koala apparently can live only on the leaves of one species of eucalyptus trees. Repeated attempts to transport him overseas have only resulted in starvation.

Science News Letter, April 14, 1934

CHEMISTRY

Lord Rutherford Finds Triple Hydrogen Weight

THE WEIGHT of science's newest baby, the triple weight hydrogen isotope, has been determined by Lord Rutherford, the British physicist who discovered it a few weeks ago as a result of smashing double weight hydrogen atoms. It is 3.0151 on the chemical mass scale on which the common oxygen atom weighs just 16. If three ordinary hydrogen atoms come together to make the triple hydrogen atom, there is a loss of weight presumably released as energy equivalent to nearly 8,000,000 electron-volts. Lord Rutherford's estimate is published in *Nature.*

Science News Letter, April 14, 1934

NCE FIELDS

ASTRONOMY

Big Telescope Sees Spot Discovered by Amateur

A CONSPICUOUS spot on the surface of the planet Jupiter has been discovered by a Berlin amateur astronomer and confirmed by observations made through the great refracting telescope of the Potsdam Observatory, the central bureau for astronomical telegrams at Copenhagen has been informed.

Learning of the discovery by the amateur named Kutscher, Dr. R. Müller and Prof. W. Münch observed the planet with a telescopic magnification of 300 diameters. Dr. Müller reported:

"In spite of very bad seeing we could recognize a diffuse spot in the dark northern equatorial belt, which projected to the south and to the north of the dark belt as a conspicuous arch-like formation, so that one had in all the impression of a globular object. Under most favorable conditions of seeing further details would probably stand out."

Science News Letter, April 14, 1934

ARCHAEOLOGY

Indian Hot House Remains Excavated at Macon

REMAINS of a round building which agrees in most particulars with written accounts of the "hot house" of Creek Indians has been discovered in a mound at Macon, Georgia. The "hot house" or ceremonial house served the Indians as a sort of combined temple, state house, men's club, and hotel.

Excavation of Indian mounds in and near Macon is being directed by Dr. A. R. Kelly and James A. Ford, representing the Smithsonian Institution. The work was begun as a CWA project under Smithsonian direction.

The hot house discovered at Macon had been burned at some unknown time in the past, it is inferred from the finding of charred roof beams. The building is of stiff red clay, with a sunken fireplace in the center and a square smoke hole over it. The building differs from those described in writings, in that it had a row of seats round the wall modeled in clay and separated by narrow clay ridges. In the descriptions known of such buildings there were beds on a raised platform in place of the clay seats. If Indian men slept in the club house at Macon, they must have stretched around the fire.

A raised dais for three important persons stood opposite the door and the front end toward the fire was shaped into what appears to be an eagle's head.

Remains of an important Indian character, whose identity is lost, were discovered in the center of another Macon mound. His body was prepared for burial by removing the flesh and arranging the bare bones in their anatomical position but tightly wrapped in skins. A log tomb enclosed the burial.

Dr. John R. Swanton of the Smithsonian says that the excavations shed much new light on Indian days in the Southeast. The mound settlements are believed to be prehistoric, though their precise age is yet undetermined.

Science News Letter, April 14, 1934

AGRICULTURE

New Type of Terracing Checks Erosion Better

LAND terracing of a new type, more effective in checking soil erosion than the terrace style now used, is described by Prof. F. L. Duley of the Kansas State Agricultural College at Manhattan, Kans., in a report to *Science*. It gains its effectiveness by the simple device of reversing the structure of the "orthodox" terrace.

Terraces, as now built in an endeavor to prevent the washing away of farm lands, consist of a broad, shallow trench or channel, with a parallel wide, flat-topped raised zone, the terrace proper. These are thrown in concentric lines around the slopes of hillside fields.

In a test of an area terraced in the usual way, with the channel on the uphill side of the terrace, it was found that the run-off of water and the soil losses through erosion were actually greater than they were on unterraced lands of the same slope. But when the channel was cut on the downhill side of the terrace, both run-off and erosional wastage were materially reduced.

"Further tests are needed to prove the practicability of this type of terrace in the field," comments Prof. Duley, "but the results so far indicate for it a great superiority over the so-called Mangum or broad-base terrace that has been used so widely in the past."

Science News Letter, April 14, 1934

PALEONTOLOGY

Turkey-Sized Dinosaur Found in Arizona

IF ALLEY-OOP, comic-strip caveman, had really lived when dinosaurs ramped the earth, he could have celebrated Thanksgiving Day in style. For there were little dinosaurs as well as big ones; one of these, just about the size of a turkey, was described before the Paleontological Society by Prof. Charles L. Camp and Dr. V. L. Vanderhoof of the University of California. The remains of this small saurian, which ran about on its hind legs, like a bird, were found in northern Arizona by a party under the leadership of Dr. Ansel Hall of the U. S. National Park Service.

The age of the new small dinosaur species is set as Jurassic, which means roughly some 150 million years ago. This is just too bad for Alley Oop, for that Neandertaloid gentleman belongs to the much later Pleistocene, only a hundred thousand years or so ago at most. And, accommodating cartoonists to the contrary notwithstanding, there were no dinosaurs in caveman times.

Other papers at the session of the Paleontological Society disclosed a record of much activity and many discoveries of interesting and important fossil records in the West. They included new links in the line of descent of horses, an extinct rabbitlike animal, the skull of a gigantic extinct bison, and a possible ancestor of the zoologically puzzling modern pronghorn antelope.

Science News Letter, April 14, 1934

BOTANY

Sweet Clover From China To Make Sweeter Hay

A NEW variety of sweet clover, lacking the bitter taste that makes most sweet clovers unpalatable to livestock, has been discovered in China and tested out under American conditions at the Wisconsin Agriculture Experiment Station at Madison. Success with the new crop is reported by Prof. R. A. Brink of the genetics department, in a communication to *Science*.

The plant is an annual, reaching a height of from 15 to 34 inches, with small yellow flowers and smooth seeds. The original propagation stock was sent to the United States by plant explorers of the U. S. Department of Agriculture, working in China, Manchuria and Korea.

Science News Letter, April 14, 1934

EVOLUTION

Man of the Future

Greater Height, Hairless Body and Larger Brain But Smaller and Poorer Teeth Seen 500,000 Years Hence

By DR. FRANK THONE

EVER since Darwin popularized the doctrine of evolution, and as a consequence thereof extended man's history into the past a hundred times as far as people were used to thinking it had gone, a favorite pastime of prophets of the romantic school has been to project man's history-to-be into imagined future centuries. Some very fascinating and fantastic pictures have thus been drawn of what humanity will be like, but they have been almost wholly the work of imagination; scientists have for the most part shied off, denying that they were prophets or the sons of prophets.

But now arises in the assembly of romancers and sheer guessers a young man soundly versed in anthropology, the Science of Man, and offers a modest forecast of what mankind may be like 500,000 years from now. He is Dr. H. L. Shapiro, associate curator of physical anthropology at the American Museum of Natural History. He is a young man, but his ability and promise are well attested by his older colleagues. And the suggestions he puts forth, somewhat provisionally, are not just guesses; they are based on careful study of the fossil remains of early races of man and of his nearest cousins among the lower animals, together with observations of what seem to be present trends of physical development among modern men. In other words, Dr. Shapiro's prophecy is the application of a common method of sciences—the projection of the more or less solid line of the known past as a dotted line into the unknown future.

To forecast what man may be like at the end of half a million years may seem a very bold thing to do, but Dr. Shapiro, with some humor, declares it to be exactly the opposite. There are two ways, he says, for a prophet to escape the consequences of prophesying wrongly: either he may be as vague as the famous Delphic oracle was, so that anything that happens may be taken as the fulfilment of his dictum, or he may set the date so far in the future that he will be dead and gone beyond the reach of criticism by the time the outcome of his prophecy is known. So five hundred thousand years offers immunity.

There is another good reason, however, for taking so long a focus into the future. Any prophecy at a much shorter range, say ten or fifty thousand years, Dr. Shapiro says, might not be particularly interesting, for evolution moves so slowly that nothing much is likely to happen to man's physical being in such short periods as those. Present-day man is very little changed from the men of the later days of the Old Stone Age, if indeed he is changed at all. But half a million years gives man time enough to change his make-up and emerge with at least a slightly different face and figure.

Precaution

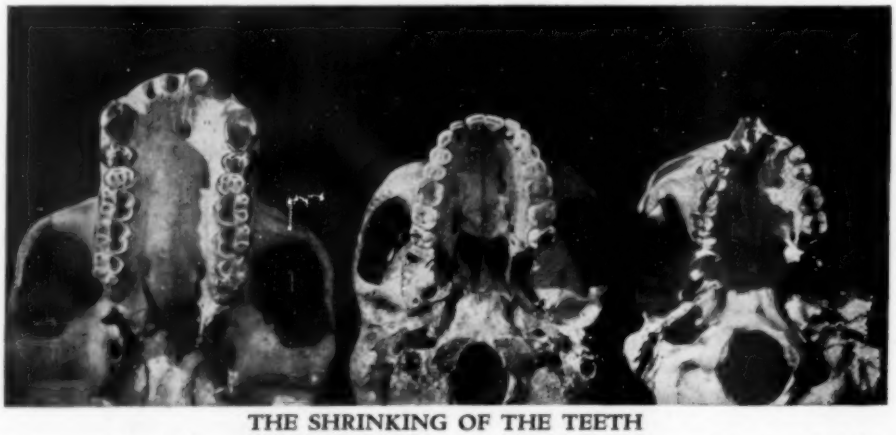
Before launching into his prophetic career, Dr. Shapiro also takes another precaution, as a proper scientist should. He covers up contingencies with a solid, protecting "if." Man is to a considerable extent the creature of his environment. If major changes should take place in the earth's astronomic behavior, or if its climate, geology or other factors that influence man should become radically different in this five hundred thousand years, then naturally all bets are off. But if conditions remain substantially as they are today—and Dr. Shapiro thinks this is as likely as any other possibility—then a forecast can be ventured.

"The earth, we have no reason to doubt, will continue in its orbit at a speed not perceptibly different," says Dr. Shapiro. "Nature, perhaps rather more under control than now, will function in the accustomed way, with occasional eruptions to warn man of his human and finite powers. Inevitably in this long period of time civilizations will have declined and new ones will have arisen to take the lead for a time. Perhaps on several occasions civilization will come perilously near to barbarity, but it will ever spring anew and to dizzier heights. There is nothing in human history inconsistent with this view.

"Nor, on the other hand, do I share the opinion of some that men will have become so enmeshed in machines that he will have lost the function of his appendages through disuse. No, the use of our arms and legs, even though it be only for sport, will be vigorous. In this I agree with Aldous Huxley in whose brave new world man employs machines to his enhanced satisfaction but nevertheless enjoys the exercises of his body."

That eugenics will greatly influence the physical development of the race Dr. Shapiro doubts. It is conceivable, even inevitable, he says, that its principles will be applied, but "it will not deflect the stream of evolution very far from its course."

The first thing you might notice, if you saw your great-grandson-16,666-times-removed approaching from a dis-



THE SHRINKING OF THE TEETH

Left, gorilla; middle, Australian aborigine; right, modern "advanced" man, with his greatly reduced jaw arch and feebler dental array.

tance, would be his great height and corresponding bulk. Even in recent measured times, people of the same stock, of the same line of descent, have been growing taller and heavier. Dr. Shapiro cites the close physical measurements that have been made on three generations of Harvard men. The present generation in this group is about 3.55 centimeters (1⅜ inches) taller than their own fathers, younger sons are somewhat taller than their elder brothers, and the fathers are taller than the grandfathers.

No Place for Food Pills

The increase in height will entail an increase in girth, as well, probably. Such has been the tendency in all lines of animal descent. That is what happened in the long descent of the horse from the little Eohippus, and as for the great saurians of the geologic Middle Ages—well, Dr. Shapiro breaks into verse about them:

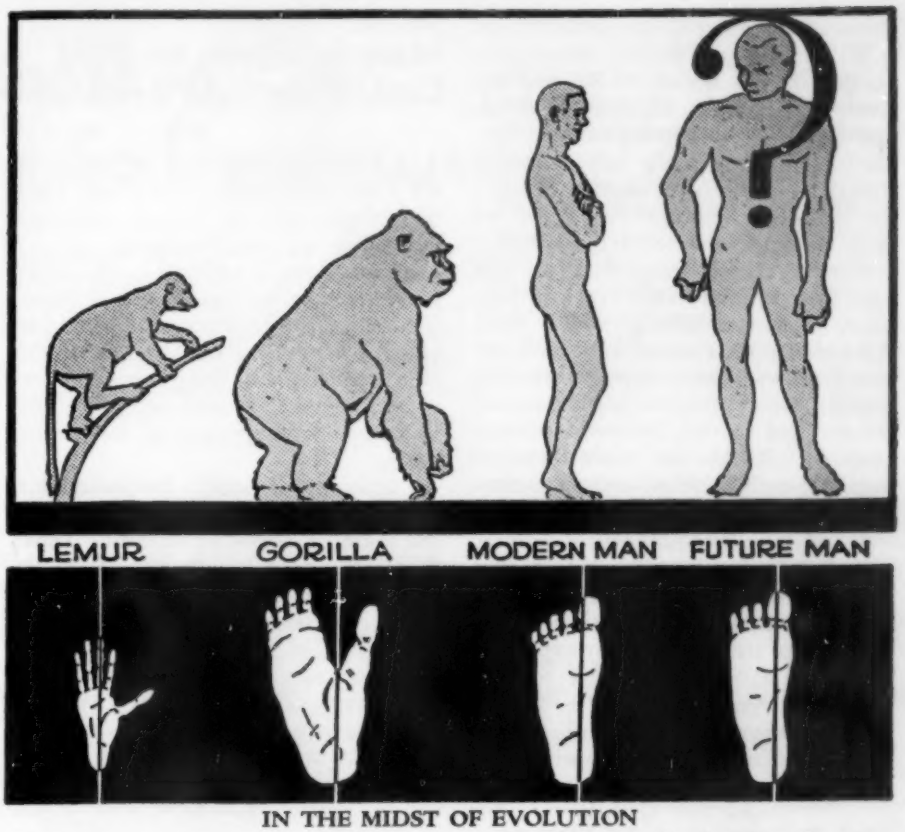
"One of these ponderous creatures might well have looked back to its phylogenetic youth and sung with sadness:

'Fading is the taper waist,
Shapeless grows the shapely limb,
And although severely laced,
Spreading is the figure trim!
Stouter than I used to be,
Still more corpulent grow I.
There will be too much of me
In the coming bye and bye—
There will be too much of me
In the coming bye and bye.'"

This taller, heavier, many-times-removed great-grandson will of course require nutriment for his bigger body. Dr. Shapiro is not one of those who expect future man to have a much-reduced digestive system, sufficient only to absorb highly concentrated food-pills with which they fancy man will content himself. He makes mock of such dismal forecasters:

"Perhaps even such a vestigial digestive tract may be dispensed with altogether if man ever becomes indifferent to food. In that sad day the essential nutriment of life might then be injected directly into the blood stream.

"But I cannot accept this dismal future. The delights of the table are too pleasant to be lightly eliminated in favor of the sterile and joyless consumption of food pills. I can perceive no diminution in man's appetite—if anything he eats more than primitive man—and certainly I have yet to know a healthy man who shows even the faintest inclination to relinquish the sensuous and delicate enjoyment of solid foods. Therefore I leave you your stomach and its appurtenances."



IN THE MIDST OF EVOLUTION

Back of modern man there is the big beast and the little beast; ahead of him there is—what? These sketches suggest the trend. The lower panel shows the development of the foot, with the suggestion that man may shed a toe in the future.

But even though the digestive system remains intact, one adjunct to it is undergoing modifications and will continue to do so, Dr. Shapiro warns. This is our dental equipment. No vertebrate is afflicted with such extensive dental decay as man, he says. Our jaws have shortened amazingly since the happy forgotten tree-dwelling days—indeed, many modern men never get the use of their third molars, or wisdom-teeth. A whole new branch of dental surgery—orthodontia—has been developed to take care of the many ills of over-crowded, badly-arranged, ill-erupted teeth. So when our bulky and well-stomached future man eats, he will have to manage his pleasures of the table with even poorer and smaller teeth than we have now, and perhaps fewer of them.

Improvement in Brain

Even more significant, however, may be the changes taking place in the top of man's head during the half-million years to come. His brain may be expected to increase in size—although Dr. Shapiro hedges his prophecy at this point with the reminder that cerebral evolution may be accomplished by an improvement in the quality of the brain without an accompanying increase in size. But, in spite of certain exceptions to be noted, the human brain has steadily grown larger, from the most ancient to the most modern specimens. Dr. Shapiro gives 900 cubic centimeters for Java Man, 1000 cubic centimeters for the somewhat later Peking man; for the modern European, 1450 cubic centimeters. Projecting the line into the future would give a brain-size of 1725 cubic centimeters 500,000 years from now.

"But this need not call up a picture of a balloon-headed individual," our anthropologist reassures us. "There are men to be met without special comment on the streets today whose skull capacity reaches and even exceeds this figure."

Nevertheless, we may expect the human head to become more dome-like as the brain becomes larger. For the bottom of the skull, as indicated by past developments, can be expected to become shorter. The very shortening of the upper jaw, as the teeth became more poorly developed, has helped in the pulling in of the facial angle to a more and more nearly vertical (*Turn Page*)

slope. Although they are probably not at all on the same line of descent, the gorilla, the Australian native and the European white man illustrate the development of facial steepness very well indeed. The great ape's face is human though he still has a decided "mug"; the European is straight-faced, and we even encounter dishfaced individuals.

Another cranial change that past ages have brought, and future ages may continue, is the smoothing of the skull. Apes develop a crest of bone and tremendous eyebrow ridges. Primitive man had heavy eyebrow ridges also, and these ridges survive, reduced, in many moderns. But on the whole there has been a smoothing off of angles, an evening out of curves.

In this feature, the females have always kept ahead of the males, in apes, in primitive men, in moderns. If the refinement of the skull continues along the lines of the past, we may expect the men of 500,000 years hence to have "feminine" skulls. Meantime the women will have achieved still rounder skulls and smaller faces—their crania will have become infantile.

Science News Letter, April 14, 1934

MEDICINE

Many in Schools for Blind Could Have Sight Restored

MANY children who are now in schools for the blind might have their sight restored through adequate medical or surgical treatment.

This fact was discovered in the course of a survey undertaken by the National Society for the Prevention of Blindness and the Committee on Statistics of the Blind. Measures to bring these children proper medical attention and eventually to restore their eyesight are now being taken.

"Ignorance is usually the underlying reason for loss of sight, whether it be the result of disease or accident," Lewis H. Carris, managing director of the Society, asserted in making public the Society's annual report which described the survey of children in schools for the blind as well as other activities of the Society. This particular survey was made as part of a study of causes of blindness. A series of reports on the situation will soon be published.

Science News Letter, April 14, 1934

MEDICINE

Trichinosis Deaths Traced To Parasite in Heart

ACTUAL micro-organisms and not some mysterious poison thought to have been generated by them are responsible for fatal inflammation of the heart in human cases of trichinosis, the disease produced in humans through the eating of undercooked pork in which the parasite, *Trichina,* is present.

This discovery was made by Drs. Carl V. Weller, Glenn A. Dunlap and John C. Buhger of the University of Michigan.

Most thorough microscopic examination of diseased heart tissue recovered from post mortem cases apparently had failed to show the presence of the encapsulated *Trichina* embryo, he explained, although these could be found in great numbers in muscle tissue throughout the rest of the body. Yet it was this acute inflammation of the heart tissue that caused death some weeks after infection with the organism. Hundreds of fatal cases were studied, but always with the same negative result. Thus it was assumed that the conclusions of earlier investigators were correct.

Then at this juncture a discovery was made. Medical men had been searching for the familiar, rounded, encapsulated form of the embryo. Dr. Buhger was puzzled by the presence in his microscope field of a long, slender granulated body, easily confused with ordinary tissue. He studied it closely and finally recovered a specimen of the *Trichina* embryo un-encysted. Further examination revealed others. But other fatal cases failed to give the same results.

Experiments on animals revealed that the free embryo may be found in the heart muscles seven to fifteen days after infection, but that after this time it disappears and cannot be seen in any form. This is true although the other muscles in the body may be crammed with the parasite. Nevertheless, the acute inflammation of the heart continues, and it is this condition which causes death, Dr. Buhger stated.

Science News Letter, April 14, 1934

RADIO

PSYCHOLOGY AND UNEMPLOYMENT

an address by

Prof. Morris S. Viteles

Of the Psychological Laboratory and Clinic at the University of Pennsylvania.

Wednesday, April 18, at 4:30 p. m., Eastern Standard Time, over Stations of the Columbia Broadcasting System. Each week a prominent scientist speaks over the Columbia System under the auspices of Science Service.

PSYCHOLOGY

Stomach Trouble Treatment Aided by Psychologists

PSYCHOLOGICAL methods so aided the recovery of 19 patients suffering from gastric disturbances that within six weeks they were eating anything they wanted without ill effects, it was reported to the New York Branch of the American Psychological Association by Dr. M. N. Chappell, of Columbia University and his associates, Dr. J. J. Stefano of Brooklyn Hospital, Dr. J. S. Rogerson and Dr. F. H. Pike, of Columbia University.

The psychological treatment was supplementary to ordinary medical treatment. A "control" group of 21 patients received only the medical treatment; only 14 of these were greatly improved after a month's time, and these suffered a return of their symptoms when their diet was broadened.

No mystical or mysterious explanation is necessary to account for the success of this treatment, the scientists explain. They did not use psychoanalytic methods. The symptoms of the patients were caused by increased activity and tension of the digestive system which in turn was caused by worry and other emotions. Application of the psychological laws of learning and forgetting enabled the patients to forget the ideas upon which they had been dwelling, and so relieve the physical condition. The procedure will work even where tissue injury is present, provided the injury is not so great as to require surgical treatment, the investigators reported.

The subjects for the experiment were volunteers located through the aid of John O'Neal, then science editor of the *Brooklyn Daily Eagle.*

Science News Letter, April 14, 1934

ZOOLOGY

Zoo Turned Loose in City Would Not be So Dangerous

WHAT would happen if a zoo's entire collection of several thousand wild animals were suddenly set free in the midst of a metropolitan city?

Except for the hysterical frenzy of the population when the news became current, nothing much would happen, says Edmund Heller, director of the Milwaukee Washington Park Zoo.

The great man-eating tigers and lions would be the first to make for the bushes and trees. Unless they were cornered, they would probably not attack human beings, declared Mr. Heller. Even wild lions, he explained, have to be run down by hunters on horseback before they will give battle. Lions which have been in a zoo are certainly even more cautious.

If they were annoyed or cornered, of course, they would be the most dangerous of adversaries, Mr. Heller says, but the instinct of caution, without which they would have long ago been exterminated, would prevent them from seeking out as prey a creature whose killing power they have long had good reason to fear. The beasts always prefer escape and hiding to combat.

The fact that the animals have become accustomed to being fed by their keepers, according to the zoo director, would make it improbable that they would seek out any living prey for food. Those animals raised from infancy in the zoo would be almost too stupid for this, and would be more likely to wander around until they found a butcher shop.

If the time of the year were October or November, suggested Mr. Heller, the buck deer and buffalo might very well be dangerous. That time of the year is their breeding season, and they will look for and gore a member of their own species. Failing in finding one, they may attack and kill even their own keeper, not to speak of a bystander. At other times they will eat out of the keeper's hand.

Male elephants also are dangerous during the breeding season, and are chained down during that time. They kill from sheer affection, Mr. Heller asserted. That is why circuses no longer carry male elephants.

But the rest of the animals would be quite harmless. This is not an absolute guarantee, however, Mr. Heller emphasized, since animals, like people, are subject to moods and the most peaceful of them may attack and kill, seemingly without provocation, due to some internal stimulus.

Science News Letter, April 14, 1934

PSYCHOLOGY

Mental Tests Given to Primitive African Children

THE EXPERIENCE of giving mental tests to 50 Sousous children, primitive West-African Negro youngsters in the isolated all-native village of Koba, French Guinea, was described to the New York Branch of the American Psychological Association, in a report by Drs. Elaine F. Kinder, psychologist of New York, Solomon Machover, of Bellevue Psychiatric Hospital and Henry W. Nissen, of Yale University.

The tests were given with the aid of an interpreter who had been previously trained in the technique. All sorts of difficulties were encountered, but chief amongst them was that the children, although apparently of normal brightness, simply could not comprehend what they were to do with many of the tests. These children have had very little contact with the culture of modern civilization, and the experimenters conclude that this isolation accounts for the fact that they did well on some tests, but could not even attempt others. None of the tests used were dependent upon the use of language.

In order to arrive at some sort of estimate of intelligence quotient, or the children's "brightness for their age," it was necessary to guess at the chronological age of the youngsters. No records were kept by the tribe, and although the tribal chief and the parents were questioned, they could not help much. Consequently, a combined estimate by the examiner, the interpreter, and a white mechanician attached to the laboratory was used.

The difference betwen the scores made by these primitive children and Negro children in the United States is to be accounted for by the vast differences between the life and culture of America and of Africa, the investigators conclude. This is confirmed by the fact that the test quotients of the younger children were consistently higher than those of the older ones.

Science News Letter, April 14, 1934

CHEMISTRY

New Anesthetic Made From Natural Gas Compounds

CYCLOPROPANE, a gaseous anesthetic which is becoming popular in some hospitals because its use is not followed by nausea and also because it is relatively safe from explosion, has been prepared cheaply from certain constituents of natural gas, by three Purdue University chemists, Dr. H. B. Hass, E. T. McBee, and G. E. Hinds. At the meeting of the American Chemical Society they reported on the process by which they have lowered its cost to a fraction of what it used to be.

Science News Letter, April 14, 1934

Seeds of the kapok, a relative of the cotton plant, are expected to gain in use as stock feed, since the toxic principle of cotton seed is not present in kapok seed.

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PHARMACOLOGY

Fast Elimination of Poison May Not Mean Recovery

WHY PRESENT methods of treating poisoning by sleeping powders are not more effective was revealed to the American Physiological Society when Dr. Theodore Koppanyi and W. S. Murphy of Georgetown University School of Medicine reported their studies on veronal and related drugs.

These modern sleeping powders cause thousands of cases of poisoning throughout the world every year, Dr. Koppanyi said.

Veronal poisoning is treated by injecting into the veins large amounts of sugar and salt solutions with the object of flushing the poison out of the body. Dr. Koppanyi and his associates found that these methods did little good, judging from their effect on cats. Even with the best methods, by which it is possible to drive out as much veronal or barbital in five hours as would ordinarily take two or three days, the improvement is slight.

In other words, methods of treatment directed toward quickly ridding the body of the poison do not necessarily mean the recovery of the patient. Dr. Koppanyi found the reason for this when he studied the action of the sleeping powders on cats and rabbits.

With cats the effect of the drug increased each day although more and more of the original dose was being eliminated. These animals were unable to stand, walk or eat and showed depression when the amount of the drug remaining in their bodies was too small to cause any appreciable effect if injected into other cats.

With rabbits, on the other hand, the drug was eliminated with increasing slowness so that more and more of it found its way to the blood stream, but when the amount in the body exceeded the average fatal dose, the animals were still able to stand, walk and eat.

Unfortunately, man seems to behave in the same way under the effect of veronal as does the cat. The drug is eliminated from his body in exactly the same way as from the cat's. He therefore suffers from accumulation of effects of the drug, even after most of it has been eliminated from his body.

Science News Letter, April 14, 1934

An apparently new vitamin B factor which makes rats grow, found in whole wheat by Nellie Halliday and Linnea Dennett of the Michigan Agricultural Experiment Station was reported to the American Institute of Nutrition. Animals fail to grow, and develop certain nervous symptoms when this vitamin is lacking from their diet. The vitamin is not the familiar B_1 nor vitamin G, but resembles that known as B_4.

Boiled eggs can be distinguished from uncooked eggs by a spinning test: a cooked egg will twirl easily, while a raw egg can scarcely be made to turn.

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BOTANY

NATURE RAMBLINGS
by Frank Thone

Violets

THERE ARE a few early spring flowers that blossom before the violets, but until the children can go into the woods and bring back handfuls of their favorite blue and yellow posies it can hardly be reckoned that spring is really here. Fortunately the violet is a hardy plant, almost as hardy for a plant as the robin is for a bird, and spring is seldom long delayed on its account. Indeed, one can sometimes find violets in bloom in sheltered spots at almost any time when a few warm days break into the winter, just as the same kind of days bring out small boys for pre-season games of marbles.

It is a fortunate thing that violets can be picked freely without fear of exterminating the genus, else we should have to add another, and in this case most irksome, prohibition to the already too long list of flowers whose gathering is *verboten*. But the violet depends little on its showier flowers for planting succeeding crops. The really earnest business of seed production is taken care of during the summer by strange little green, bud-like flowers down among the stems. These never open, but produce their seeds as it were secretly, by internal self-pollination. So the children may pick violets as they please; except that it might be good discipline to get them to leave a few "for the plant to keep."

It is a curious and interesting circumstance in the history of language that this most gracefully-shaped of flowers should have given its name to the queen of musical instruments. For the violin is the descendant of the viola, and *Viola* is the name of the violet in both Latin and Italian.

Science News Letter, April 14, 1934

•First Glances at New Books

Ornithology

SONGS OF WILD BIRDS—Albert R. Brand—*Nelson,* 91 p., 2 phonograph records, $2. The author has done a most unique thing in the history of bird study: captured songs of a considerable number of our most interesting birds and put them on two small disk records that can be played on any phonograph; and now builds his book around them, telling first of his technique, trials and success in recording, then how and why of bird song, and finally how to use his book. Included also are brief but comprehensive descriptions of the birds studied and discussion of their songs and call-notes.

Science News Letter, April 14, 1934

Paleontology

ANCIENT ANIMALS—W. W. Robinson—*Macmillan,* xii+96 p., $2. An account of ancient animal life, from trilobites to woolly mammoths, in the same informal, colloquial style that characterized the author's earlier book, *Beasts of the Tar-Pits,* with correspondingly informal yet on the whole carefully executed restoration sketches in charcoal, by Irene B. Robinson.

Science News Letter, April 14, 1934

Aeronautics

THE BOOK ABOUT AIRCRAFT—*Frederick Warne,* 96 p., 19 color plates, 124 text ill., $2. A very attractive story of the airplane and airship for boys and girls. Photographs are largely of European rather than American craft.

Science News Letter, April 14, 1934

Mathematics

DIFFERENTIAL AND INTEGRAL CALCULUS—Clyde E. Love—*Macmillan,* 383 p., $2.75. A new edition without sweeping changes because teachers who have used the text have evinced no desire for them, the author, professor of mathematics in the University of Michigan, states in his preface. The aim of the presentation is "to reward the student who strives for real understanding as distinguished from the one who works by rote."

Science News Letter, April 14, 1934

Radio

ELEMENTS OF RADIO COMMUNICATION—John H. Morecroft—*Wiley,* 286 p., $3. This is the second edition of a text by the Columbia University professor of electrical engineering, which serves as an introduction to the author's more elaborate "Principles of Radio Communication." It should interest and benefit thousands of students and radio "hams" in and out of school who want more than a "popular" book and are equipped with the little algebra necessary to the understanding of this text.

Science News Letter, April 14, 1934

Medicine

CONSTITUTION AND HEALTH—Raymond Pearl—*Kegan Paul, Trench, Trubner, London,* 89 p., 2s. 6d. "The student of constitution has a major role to play in the development of an adequate understanding of human nature," writes Dr. Pearl at the conclusion of this small volume. The complicated nature of the subject and present knowledge of the relations between heredity, constitution, disease and health are briefly and simply discussed in the text, which is illustrated with photographs and charts. There is an extensive bibliography for so small a book.

Science News Letter, April 14, 1934

National Parks

CARLSBAD CAVERNS NATIONAL PARK—Isabelle F. Story—*Govt. Print. Off.* Brief, well written, attractively illustrated booklet on one of the newer national parks of the Southwest. Requests for copies should be sent directly to the National Park Service, Washington, D. C.

Science News Letter, April 14, 1934

Physics

THE THERMODYNAMICS OF ELECTRICAL PHENOMENA IN METALS—P. W. Bridgman—200 p., $3.75. This book brings together the substance of a number of papers written during the past ten years by the well-known electrical engineer and physicist of Harvard. It makes application of classical thermodynamics to electrical phenomena amenable to thermodynamic treatment.

Science News Letter, April 14, 1934

Seismology

UNITED STATES EARTHQUAKES 1932—Frank Neumann—*Govt. Print. Off.,* 21 p., 5c. A summary prepared by a mathematician at the U. S. Coast and Geodetic Survey.

Science News Letter, April 14, 1934

Horticulture

GARDENER'S HANDBOOK—L. H. Bailey—*Macmillan,* 292 p., $3. A complete revision and extension of Dr. Bailey's earlier book, *The Gardener,* compacting into one handy volume the cream of his life-long encyclopedic labors on horticulture for the benefit of the amateur and home-maker. Vegetables, fruits and flowers are all briefly but adequately treated, and the text is pointed up with large numbers of clean-cut line illustrations.

Science News Letter, April 14, 1934

Sociology

BLINDNESS AND THE BLIND IN THE UNITED STATES—Harry Best—*Macmillan,* 714 p., $6.50. The enormous amount of factual information contained in this book should make it very useful to those engaged in work for the blind, while the blind themselves may be greatly helped if its sympathetic interpretation of their needs and personality reach those of the public who have no special interest in or familiarity with the blind and their problems.

Science News Letter, April 14, 1934

Medical History

THE RENAISSANCE OF MEDICINE IN ITALY — Arturo Castiglioni — *Johns Hopkins,* 88 p., $1.50. The Hideyo Noguchi Lectures appear here in book form. The story of the author's own life told in the preface by Dr. Henry E. Sigerist is almost more interesting than Dr. Castiglioni's charming presentation of his subject.

Science News Letter, April 14, 1934

Engineering

TEXTILES AND THE MICROSCOPE—Edward Robinson Schwarz—*McGraw-Hill,* 329 p., $4. Fundamentals and important developments in the technique of textile microscopy are outlined for the teacher and technologist by the assistant professor of textile technology at Massachusetts Institute of Technology.

Science News Letter, April 14, 1934

Biology

LE DEVENIR DU SEXE—Vera Dantchakoff—*Hermann & Cie, Paris,* 57 p., 15 fr.

Science News Letter, April 14, 1934

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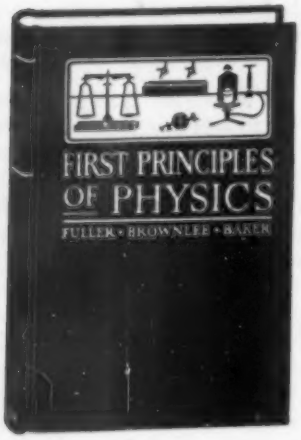
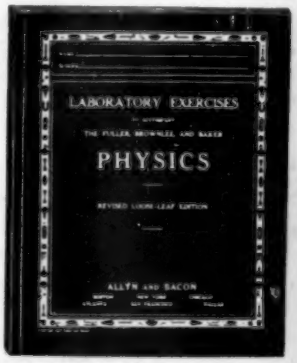
THE WORLD OF PHYSICS

FROM THE EARLIEST RECORDS of man's activities we learn that he has constantly sought to utilize and control the forces of Nature and to simplify and classify them the better to understand their operation. The control of these forces has brought him practical results of greatest importance; the study of them has brought him a freedom from superstition, a stirring of the imagination, and a training of the reasoning faculties.



In the field of applied Physics we see that our lives have been modified at every point. Industry and manufacture, transportation by air, land, and sea, communication by wire and by radio, our understanding of our own bodies by X-ray and microscope have all been established on a new and surer basis as the result of the patient research and logical deduction of the experimentalist in Physics. It would be less difficult to list separately this multitude of magnificent achievements than to discover one aspect of our lives that Physics has not altered.

While the ignorant man accepts without question these practical achievements, the intelligent man yields ever more readily to the adventure and romance of the patient search for truth. Inquiring minds turn outward to the boundaries of space and inward to the mysteries of atomic structure. In unfolding the plan of Nature men gain the satisfactions that come from a quickened imagination, from a dependable habit of thought, and from the discipline that checks reason against experiment at every step.



The ideal textbook in Physics simplifies this task of the teacher by presenting in clear easy language not only the facts but also the inspiration and logic by which general principles are derived from these facts. Such a book enables the pupil to teach himself by text, illustration, and application of facts to his environment, to test himself by simple fact questions at frequent intervals and by a wide range of thought-provoking exercises and objective tests.

The ideal textbook aids the successful teacher of Physics to do more than interest his pupils in the practical aspects of a noble science. It helps him to lead them to lay for themselves a foundation of respect, interest, and trust in a body of knowledge that represents one of the highest achievements of their race.

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